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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/573,480

07/26/2006

Samuel Neto

13111-00037-US1

2574

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06/23/2009

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EXAMINER

SAHA, BIJAY S

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/573,480	<b>Applicant(s)</b> NETO ET AL.	
	<b>Examiner</b> BIJAY S. SAHA	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The amendment filed on April 28, 2009 under 37 CFR 1.312 has been entered.

### ***Election/Restrictions***

Applicants elected group I **claims 1-10 and 12-20** with traverse and group II **claim 11** was withdrawn in the prior Office Action.

Applicant's request to rejoin group II claim 11 in the reply filed on April 28, 2009 is acknowledged. The request to rejoin is on the ground(s) that the claim has been amended as "utilizing a catalyst prepared according to claim 1". This is not found persuasive because the claims 1-10 and 12-20 are drawn to a process for producing the catalyst. The catalyst thus prepared can be utilized in multiple chemical reactions not just the in the production of phthalic anhydride.

The requirement is still deemed proper and is therefore made **FINAL**.

### ***Status of Application***

The amended and original **claims 1-10 and 12-20** are pending and presented for the examination. The original **claim 11** is subject to restriction.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 1-10 and 12-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mauldin et al (USP 4,977,126 Dec. 11, 1990) in view of Ruedinger et al (USP 6,274,763 Aug. 14, 2001).

Regarding claim 1, 2 and 3: Mauldin teaches the following:

- A process for the preparation of catalyst used for production of hydrocarbons in the gas phase (Col. 2 lines 31-33)
- Support material in the form of titania-alumina, silica and alumina (Col. 6 lines 25)
- Weight of support material in the range of 1.0 kg to 22.0 kg (Col 3 Table 2)
- A fluidizing gas air (Col 6 line 58)
- Fluidizing air rate in the range of 55 to 375 CFM (approximately 95 to 640 m<sup>3</sup>/h) (Table 2 Col 5)
- Temperature in the range of 40 to 110 °C (Table 2 Col 7) maintained by the fluidized gas (Col 4 line 14)
- A feed solution that contains various chemical constituents for the catalyst (Col 3 lines 56-59)
- Support particles are sprayed with a suspension containing catalyst constituents (Col 3 line 43)

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- Feed rate of the solution in the range of 19 – 294 grams/min (Table 2 Col 4).

**Mauldin** does not explicitly teach the following:

- Composition of the binder in the suspension or solution containing the catalyst constituents,
- quantity of the binder in the suspension or solution containing the catalyst constituents.

**Ruedinger** teaches the following:

- Vinyl acetate and vinyl laurate (Col 5 line 17) as binder (Col 6 line 23)
- Loading of binder as 29 gram (3%) in Example 1 (Col 5 line 47) and 43.5 gm (6%) (Col 7 line 41)
- Other components of catalysts such as  $\text{TiO}_2$  and  $\text{V}_2\text{O}_5$  (Col 5 line 47)

At the time of invention it would have been obvious to a person of ordinary skill to synthesize the catalyst utilizing the process parameters of **Mauldin** and adding binder in the solution in view of the teaching of **Ruedinger**. The suggestion or motivation for doing so would have been to enhance the adhesion of inorganic catalyst chemical components (such as  $\text{V}_2\text{O}_5$ ) on to the support material. In the absence of a binder, inorganic components do not adhere well to the support material.

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With respect to Parameter K, taking the Table 2 Catalyst Preparation No. 1 data from **Mauldin** and normalizing the numbers on the basis of support weight of 1 kg to 80 kg (as an example), the air flow rate, solution rate and support weight are 7608 m<sup>3</sup>/h, 1680 gm/min and 80 kg; respectively. Temperature is 95 °C and Binder concentration is 3%.

Hence, normalizing the **Mauldin's** support weight (from 1 kg to 22 kg) to applicant's support weight (from 60 kg to 240 kg), the range of flow gas and solution rate are similar to the applicant's data.

Binder wt.% data as shown by **Ruedinger** is in the range of 3% to 6%.

Temperature is in the range of 40 °C to 110 °C.

Since the process parameters are in the range of applicant's data, it is expected that the K value will also follow.

Regarding claims 4, 12 and 13, Mauldin discloses air (Col 3 line 57).

Regarding claims 5, 6, 14, 15 and 16 Ruedinger discloses Two-coat catalyst (Col 5, Example 1) where 2<sup>nd</sup> spray suspension is sprayed on top of 1<sup>st</sup> spray suspension.

Regarding claims 7, 17, 18, 19 and 20, Mauldin teaches application of supports in the form of spheres and extrudates in the size of 0.8 mm (Col 6 Table 1). Mauldin

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does not explicitly teach catalyst in the shape of cylinders, rings or columns. Using the extrusion, desired size and shape can be obtained.

Regarding claim 8, Mauldin discloses fluid bed equipped with nozzles entering either above or below to the bed; such devices being available from commercially available sources and suppliers (Col 4 lines 45-55).

Regarding claim 9, Ruedinger discloses application of  $\text{TiO}_2$  and  $\text{V}_2\text{O}_5$  (Col 5 line 47) in the range of 1-4 wt. %; Ruedinger also teaches ball milling process (Col 5 line 48). Ruedinger does not expressly teach a specific particle size range. It is commonly known in the art that ball milling process (taught by that Ruedinger) is capable of producing the particle size in the range of 20 micron to 250 microns.

Regarding claim 10, Ruedinger discloses application of  $\text{V}_2\text{O}_5$  (Col 5 line 47).

### ***Summary***

The **claims 1-10** and **12-20** are rejected.

### ***Response to Arguments***

Applicant's arguments filed April 28, 2009 have been fully considered but they are not persuasive.



Request for rejoining of amended claim 11 is acknowledged. Claim 11 is the subject of restriction as highlighted in the Election/Restriction section above.

Applicants disclosure on 35 USC112 second paragraph is acknowledged and rejection has been withdrawn.

Applicants argue about the parameter K. According to the applicants' disclosure, K is simply a mathematical synthesis of a number of process parameters such as gas flow and temperature among others. Applicants utilize this as the predictor of the scale up chemical operations derived from a set of small scale process runs. Prior art reference (**Ruedinger**) describes 27 examples and provides the summary and comparison in terms of %Yield analogous to K. Prior art reference (**Mauldin**) further describes a set of fourteen catalyst preparations and compared them with RIM Thickness analogous to K.

Applicants argue about the fluidized bed of support bodies and assert "not even concerned with the general process of the present application using a fluidized bed of support bodies". Prior art (Mauldin) does suggest fluid bed (Abstract, col 2 lines 59-62) and describe "support particles in fluidized bed while particles are maintained at temperatures above 50°C".

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The applicants argue about the Fischer\_Tropsch synthesis and further argue "(reference Mauldin) fails to suggest a catalyst for gas-phase oxidation". Applicants' claims are drawn towards a process for producing a catalyst for gas phase oxidation. Examiner considers that Fischer\_Tropsch synthesis does involve gases such as H<sub>2</sub> and CO and part of the H<sub>2</sub> is transformed into H<sub>2</sub>O. Further, as Mauldin points out Fischer\_Tropsch synthesis does involve the application of catalysts (col 2 line 33).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BIJAY S. SAHA whose telephone number is (571) 270-

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5781. The examiner can normally be reached on Monday- Friday 8:00 a.m. EST - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Mayes can be reached on (571) 272 1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BIJAY S SAHA/  
Examiner, Art Unit 1793

BSS  
June 18, 2009

/Melvin Curtis Mayes/  
Supervisory Patent Examiner, Art Unit 1793